

Ocean Sci. Discuss., referee comment RC1  
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## Comment on os-2021-38

Anonymous Referee #1

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Referee comment on "Geophysical and biogeochemical observations using BGC Argo floats in the western North Pacific during late winter and early spring. Part 1: Restratification processes of the surface mixed layer" by Ryuichiro Inoue et al., Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-38-RC1>, 2021

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In the manuscript, Inoue et coauthors analyzed 4 post-storm restratification events occurred between Feb-Apr 2018 in the North-western Pacific: their aim is to understand oceanic restratification and its influence in BGC processes. They use BGC Argo data from two floats, satellite data of surface chlorophyll concentration, Daily Global Ocean (Physical) Reanalysis at 1/12 horizontal resolution provided by CMEMS and ERA5 hourly Reanalysis from ECMWF for the atmospheric conditions (surface heat fluxes and wind stress conditions).

After these storm events they state that Carbon to Nitrogen (CN) ratio sometime did not correspond to the Redfield ratio: they wanted to identify if these differences was caused by the post storm physical conditions.

### Main issues

The authors represent just a synthetic or "basic" overview of ocean stratification events in the subtropical western pacific giving a partial view of the influence on the biogeochemical processes. It is a strength that they use BGC Argo data to address the question on high temporal and "spatial" resolution, however BCG parameters are not considered in the present manuscript but in the companion manuscript. It would be was complete and useful to show and discuss also in the present paper some BGC considerations (as the title states).

They analyzed the changes of physical parameters identified by the two floats along their tracks but those changes are not necessarily temporal changes since floats move along water masses, especially close to the Kuroshio current region, therefore their analysis should be interpreted with caution.

I had difficulties to understand some of the discussion and the writing needs to be improved.

In my opinion discussion and conclusions are not adequate to the goal of the paper.

## **Minor comments**

They use BGC Argo floats to perform high resolution analysis but it would be feasible to include also Chlorophyll data analysis (Chlorophyll profiles) to enforce the surface analysis overview made with satellite which is in Fig. 10.

The reference "Sukigara et al (2021)", even if it I mentioned is in the same issue, does not appear in the Reference section as it should (even if in "temporary mode").

line 64-65: check syntax "and" and commas

line 68-69: add in the aim that the usage of high resolution data may clarify also BGC conditions (with reference the companion article)

line 83: write what kind of parameters the BGC sensors measure, even if the topic will be discussed in detail in part 2.

line 88: during the two cruises à did you mean "in the between period of the two cruises"?

In the "Other data set" section you just listed the dataset used: at least write some sentences how (for which purpose) you did used them in your analysis.

How did you defined the storm events? In fig 2, 3 and 4 you show the four post-storm period: which criteria did you use to define them?

The manuscript lacks of a structure: in the introduction section you should explain the structure of the article giving the list of the topic you are going to discuss in the following sections.

Discussion and conclusions are not adequate to the goal of the paper.

My conclusion: I do not consider the manuscript eligible for the publication.